

THE ASTROPHYSICAL JOURNAL
CONTENTS OF VOLUME 428, PART 1

1994 JUNE 10, Number 1

	<i>Page</i>	<i>Fiche</i>
HOT GAS IN THE COLD DARK MATTER SCENARIO: X-RAY CLUSTERS FROM A HIGH-RESOLUTION NUMERICAL SIMULATION <i>Hyesung Kang, Renyue Cen, Jeremiah P. Ostriker, & Dongsu Ryu</i>	1	128-C1
CAN CONFORMAL WEYL GRAVITY BE CONSIDERED A VIABLE COSMOLOGICAL THEORY? <i>D. Elizondo & G. Yepes</i>	17	128-D5
PRODUCING THE UNIVERSAL SPECTRUM OF COSMOLOGICAL GAMMA-RAY BURSTS WITH THE KLEIN-NISHINA CROSS SECTION <i>J. J. Brainerd</i>	21	128-D11
A TEST OF THE ADHESION APPROXIMATION FOR GRAVITATIONAL CLUSTERING <i>Adrian L. Melott, Sergei F. Shandarin, & David H. Weinberg</i>	28	128-E6
DO SPIRALS AND ELLIPTICALS TRACE THE SAME VELOCITY FIELD? <i>Tsafrir Kolatt & Avishai Dekel</i>	35	128-F1
THE LUMINOSITY FUNCTION OF THE CfA REDSHIFT SURVEY <i>R. O. Marzke, J. P. Huchra, & M. J. Geller</i>	43	128-F11
DARK MATTER AROUND A CLUSTER OF GALAXIES UNDER THE LONG COSMIC STRING SCHEME <i>Tetsuya Hara, Masakazu Matsuura, Hideki Yamamoto, Petri Mähönen, & Shigeru J. Miyoshi</i>	51	128-G7
VLBI DATA FOR COMPACT RADIO SOURCES VERSUS EXOTIC FORMS OF MATTER IN THE UNIVERSE <i>J. Stelmach</i>	61	129-A5
OBSCURATION, ORIENTATION, AND THE INFRARED PROPERTIES OF RADIO-LOUD ACTIVE GALAXIES <i>Timothy M. Heckman, Christopher P. O'Dea, Stefi A. Baum, & Eija Laurikainen</i>	65	129-A11
HALO MODEL FOR INTERMEDIATE-REDSHIFT QUASAR ABSORPTION SYSTEMS <i>R. Srianand & Pushpa Khare</i>	82	129-C2
THE <i>HST</i> QUASAR ABSORPTION LINE KEY PROJECT. IV. <i>HST</i> FAINT OBJECT SPECTROGRAPH AND GROUND-BASED OBSERVATIONS OF THE UNUSUAL LOW-REDSHIFT BROAD ABSORPTION LINE QUASI-STELLAR OBJECT PG 0043+039 <i>David A. Turnshek, Brian R. Espy, Michael Kopko, Jr., Michael Rauch, Ray J. Weymann, Buell T. Jannuzi, Alec Boksenberg, Jacqueline Bergeron, George F. Hartig, W. L. W. Sargent, Blair D. Savage, Donald P. Schneider, & Arthur M. Wolfe</i>	93	129-D1
A DIAGNOSIS OF DUST IN ACTIVE GALACTIC NUCLEI THROUGH ANALYSIS OF THE INFRARED BUMP <i>S. M. Viegas & M. Contini</i>	113	129-E9
THE INTRINSIC NUCLEAR SPECTRUM OF NGC 1068 <i>Edward A. Pier, Robert Antonucci, Todd Hurt, Gerard Kriss, & Julian Krolik</i>	124	129-F8
THE OPTICAL POLARIZATION PROPERTIES OF X-RAY-SELECTED BL LACERTAE OBJECTS <i>Buell T. Jannuzi, Paul S. Smith, & Richard Elston</i>	130	129-G3
THE <i>HUBBLE SPACE TELESCOPE</i> EXTRAGALACTIC DISTANCE SCALE KEY PROJECT. II. PHOTOMETRY OF WFC IMAGES OF M81 <i>Shaun M. G. Hughes, Peter B. Stetson, Anne Turner, Robert C. Kennicutt, Jr., Robert Hill, Myung Gyoon Lee, Wendy L. Freedman, Jeremy R. Mould, Barry F. Madore, Laura Ferrarese, Holland C. Ford, John A. Graham, John G. Hoesel, & Garth D. Illingworth</i>	143	130-A5
THE LATE-TIME OPTICAL SPECTRUM OF SN 1980K <i>Robert A. Fesen & David M. Matonick</i>	157	130-B7
MAP-BASED TRIGONOMETRIC PARALLAXES OF OPEN CLUSTERS: THE PRAESEPE <i>George Gatewood & Joost Kiewiet de Jonge</i>	166	130-C5

CONTENTS

	<i>Page</i>	<i>Fiche</i>
DENSE MOLECULAR SHOCKS AND ACCRETION ONTO PROTOSTELLAR DISKS <i>David A. Neufeld & David J. Hollenbach</i>	170	130-C11
NONLINEAR INSTABILITIES IN SHOCK-BOUNDED SLABS <i>Ethan T. Vishniac</i>	186	130-E1
CARBON RECOMBINATION LINES AS A DIAGNOSTIC OF PHOTODISSOCIATION REGIONS <i>A. Natta, C. M. Walmsley, & A. G. G. M. Tielens</i>	209	130-F12
CS MULTITRANSITIONAL STUDY OF DENSITY DISTRIBUTION IN STAR-FORMING REGIONS. II. THE S140 REGION <i>Shudong Zhou, Harold M. Butner, Neal J. Evans II, Rolf Güsten, Marc L. Kutner, & Lee G. Mundy</i>	219	130-G10
VOYAGER OBSERVATIONS OF DUST SCATTERING NEAR THE COALSACK NEBULA <i>Jayant Murthy, R. C. Henry, & J. B. Holberg</i>	233	131-A13
MULTIPLE OUTFLOWS IN THE BIPOLAR PLANETARY NEBULA M1-16: A MOLECULAR LINE STUDY <i>Raghvendra Sahai, Alwyn Wootten, Hugo E. Schwarz, & W. Wild</i>	237	131-B5
GEMINGA: A COOLING SUPERFLUID NEUTRON STAR <i>Dany Page</i>	250	131-C6
STREAMING INSTABILITY IN RELATIVISTICALLY HOT PULSAR MAGNETOSPHERES <i>James C. Weatherall</i>	261	131-D5
CHARGE TRANSFER IN HELIUM-RICH SUPERNOVA PLASMA <i>Douglas A. Swartz</i>	267	131-D13
GRAVITATIONAL INSTABILITIES IN A PROTO-PLANETARY DISK INCLUDING THE EFFECTS OF MAGNETIC FIELDS <i>Hyerim Noh, Ethan T. Vishniac, & William D. Cochran</i>	275	131-E9
OBSERVATION OF PULSED HARD X-RAYS/γ-RAYS FROM PSR 1509-58 <i>S. Gunji, M. Hirayama, T. Kamae, S. Miyazaki, Y. Sekimoto, T. Takahashi, T. Tamura, M. Tanaka, N. Yamasaki, T. Yamagami, M. Nomachi, H. Murakami, J. Braga, & J. A. Neri</i>	284	131-F7
GEOMETRY AND PHYSICAL CONDITIONS IN THE STELLAR WIND OF AG CARINAE <i>Claus Leitherer, Richard Allen, Bruce Altner, Augusto Damineli, Laurent Drissen, Thais Idiart, Olivia Lupie, Antonella Nota, Carmelle Robert, Werner Schmutz, & Steven N. Shore</i>	292	131-G4
A SEARCH FOR CHROMOSPHERIC EMISSION IN A-TYPE STARS USING THE GODDARD HIGH-RESOLUTION SPECTROGRAPH <i>Theodore Simon, Wayne B. Landsman, & Ronald L. Gilliland</i>	319	132-B5
ROTATION IN THE IONIZED ENVELOPE OF MWC 349A <i>Luis F. Rodriguez & Timothy S. Bastian</i>	324	132-B12
GHRS OBSERVATIONS OF COOL, LOW-GRAVITY STARS. I. THE FAR-ULTRAVIOLET SPECTRUM OF α ORIONIS (M2 Iab) <i>Kenneth G. Carpenter, Richard D. Robinson, Glenn M. Wahlgren, Jeffrey L. Linsky, & Alexander Brown</i>	329	132-C6
NONLINEAR EVOLUTION OF THE CORONAL MAGNETIC FIELD UNDER RECONNECTIVE RELAXATION <i>R. Wolfson, G. E. Vekstein, & E. R. Priest</i>	345	132-D11
THE INFRARED TELESCOPE IN SPACE (IRTS)	354	132-E8
<i>H. Murakami, J. Bock, M. M. Freund, H. Guo, T. Hirao, A. E. Lange, H. Matsuhara, T. Matsumoto, S. Matsuura, T. J. McMahon, M. Murakami, T. Nakagawa, M. Noda, K. Noguchi, H. Okuda, K. Okumura, T. Onaka, T. L. Roellig, S. Sato, H. Shibai, T. Tanabé, T. Watabe, T. Yagi, N. Yajima, & M. Yui</i>		
NEAR-INFRARED SPECTROMETER ON THE INFRARED TELESCOPE IN SPACE <i>Manabu Noda, Toshio Matsumoto, Shuji Matsuura, Kunio Noguchi, Masahiro Tanaka, Mark A. Lim, & Hiroshi Murakami</i>	363	132-F5
THE MID-INFRARED SPECTROMETER ON THE INFRARED TELESCOPE IN SPACE (IRTS) MISSION <i>Thomas L. Roellig, Takashi Onaka, Thomas J. McMahon, & T. Tanabé</i>	370	132-G1
FAR-INFRARED LINE MAPPER (FILM) ON THE INFRARED TELESCOPE IN SPACE <i>Hiroshi Shibai, Masao Yui, Hideo Matsuhara, Norihisa Hiromoto, Takaaki Nakagawa, & Haruyuki Okuda</i>	377	132-G11
THE FAR-INFRARED PHOTOMETER ON THE INFRARED TELESCOPE IN SPACE <i>A. E. Lange, M. M. Freund, S. Sato, T. Hirao, T. Matsumoto, & T. Watabe</i>	384	133-A6
OSCILLATOR STRENGTHS OF SELECTED RESONANCE TRANSITIONS IN NEUTRAL SULFUR <i>D. J. Beideck, R. M. Schectman, S. R. Federman, & D. G. Ellis</i>	393	133-B3

CONTENTS

v

1994 JUNE 20, Number 2

	<i>Page</i>	<i>Fiche</i>
THE ZERO-POINT OF THE CLUSTER-CLUSTER CORRELATION FUNCTION: A KEY TEST OF COSMOLOGICAL POWER SPECTRA <i>Anatoly Klypin & George Rhee</i>	399	135-B9
X-RAY CLUSTERS FROM A HIGH-RESOLUTION HYDRODYNAMIC PPM SIMULATION OF THE COLD DARK MATTER UNIVERSE <i>Greg L. Bryan, Renyue Cen, Michael L. Norman, Jeremiah P. Ostriker, & James M. Stone</i>	405	135-C1
PERTURBATIVE GROWTH OF COSMOLOGICAL CLUSTERING. I. FORMALISM <i>Somnath Bharadwaj</i>	419	135-D4
NONLINEAR APPROXIMATIONS TO GRAVITATIONAL INSTABILITY: A COMPARISON IN SECOND-ORDER PERTURBATION THEORY <i>Dipak Munshi & Alexei A. Starobinsky</i>	433	135-E6
A SINGULARITY-FREE COSMOLOGICAL MODEL WITH A CONFORMALLY COUPLED SCALAR FIELD <i>S. S. Bayin, F. I. Cooperstock, & V. Faraoni</i>	439	135-F1
ARCMINUTE SKY FLUCTUATIONS AT 1.25 MILLIMETERS <i>Paola Andreani</i>	447	135-F11
THE EXPECTED DIPOLE IN THE DISTRIBUTION OF COSMOLOGICAL γ -RAY BURSTS <i>Eyal Maoz</i>	454	135-G6
ON THE SENSITIVITY OF THE <i>N</i> -BODY PROBLEM TOWARD SMALL CHANGES IN INITIAL CONDITIONS. IV. <i>Henry E. Kandrup, M. Elaine Mahon, & Haywood Smith, Jr.</i>	458	135-G12
TIME EVOLUTION OF GALACTIC WARPS <i>Peter Hofner & Linda S. Sparke</i>	466	136-A8
FLAT ROTATION CURVES: A RESULT OF THE HELICAL INVERSE CASCADE IN TURBULENT MEDIA? <i>R. D. Prabhu & V. Krishan</i>	483	136-B13
THE STABILITY OF PERFECT ELLIPTIC DISKS. I. THE MAXIMUM STREAMING CASE <i>Stephen E. Levine & Linda S. Sparke</i>	493	136-D1
PROBING RADIAL AGE/METALLICITY DEGENERACY IN EARLY-TYPE GALAXIES <i>David R. Silva & Richard Elston</i>	511	136-E7
MAPPING THE DARK MATTER IN THE NGC 5044 GROUP WITH ROSAT: EVIDENCE FOR A NEARLY HOMOGENEOUS COOLING FLOW WITH A COOLING WAKE <i>Laurence P. David, Christine Jones, William Forman, & Stuart Daines</i>	544	137-A11
ROSAT PSPC OBSERVATIONS OF NGC 4636: INTERACTION WITH VIRGO GAS? <i>G. Trinchieri, D.-W. Kim, G. Fabbiano, & C. R. C. Canizares</i>	555	137-B11
LYMAN-ALPHA ABSORPTION IN THE SPECTRUM OF THE $z = 4.5$ QSO BR 1033-0327 <i>G. M. Williger, J. A. Baldwin, R. F. Carswell, A. J. Cooke, C. Hazard, M. J. Irwin, R. G. McMahon, & L. J. Storrie-Lombardi</i>	574	137-D4
LUMINOSITY VARIATIONS OF 3C 345: IS THERE ANY EVIDENCE OF LOW-DIMENSIONAL CHAOS? <i>A. Provenzale, R. Vio, & S. Cristiani</i>	591	137-E9
NONTHERMAL PAIR MODELS, REFLECTION, AND X-RAY SPECTRAL VARIABILITY OF ACTIVE GALAXIES <i>P. Grandi, C. Done, & C. M. Urry</i>	599	137-F5
CO ABSORPTION IN LUMINOUS INFRARED GALAXIES <i>Susan E. Ridgway, C. G. Wynn-Williams, & E. E. Becklin</i>	609	137-G1
THE EVOLUTIONARY HISTORY OF LOW-LUMINOSITY LOCAL GROUP DWARF GALAXIES <i>Sidney van den Bergh</i>	617	137-G13
INTEGRAL-MOMENT ANALYSIS OF THE BATSE GAMMA-RAY BURST INTENSITY DISTRIBUTION <i>John M. Horack & A. Gordon Emslie</i>	620	138-A4
A SEARCH FOR ASTROPHYSICAL SOURCES OF LOW-ENERGY NEUTRINOS USING THE IMB DETECTOR <i>R. S. Miller, R. Becker-Szendy, C. B. Brattin, J. Breault, D. Casper, S. T. Dye, W. Gajewski, M. Goldhaber, T. J. Haines, P. G. Halverson, D. Kielczewska, W. R. Kropp, J. G. Learned, J. LoSecco, S. Matsuno, J. Matthews, G. McGrath, C. McGrew, L. Price, F. Reines, J. Schultz, D. Sinclair, H. W. Sobel, J. L. Stone, L. R. Sulak, R. Svoboda, & J. C. van der Velde</i>	629	138-B1
RED GIANT STRAGGLERS AND He WHITE DWARFS IN GALACTIC GLOBULARS <i>V. Castellani, V. Luridiana, & M. Romaniello</i>	633	138-B7

CONTENTS

	<i>Page</i>	<i>Fiche</i>
LARGE-SCALE CHARACTERISTICS OF INTERSTELLAR DUST FROM COBE DIRBE OBSERVATIONS <i>T. J. Sodroski, C. Bennett, N. Boggess, E. Dwek, B. A. Franz, M. G. Hauser, T. Kelsall, S. H. Moseley, N. Odegard, R. F. Silverberg, & J. L. Weiland</i>	638	138-C1
THE IONIZATION OF THE DIFFUSE IONIZED GAS <i>H. Domgörden & John S. Mathis</i>	647	138-D1
PHOTOEVAPORATION OF DISKS AROUND MASSIVE STARS AND APPLICATION TO ULTRACOMPACT H II REGIONS <i>David Hollenbach, Doug Johnstone, Susana Lizano, & Frank Shu</i>	654	138-D10
A BIPOLAR OUTFLOW OF IONIZED GAS IN K3-50A: H76a RADIO RECOMBINATION LINE AND CONTINUUM OBSERVATIONS OF K3-50 <i>C. G. De Pree, W. M. Goss, Patrick Palmer, & Robert H. Rubin</i>	670	138-F1
MOLECULAR ABUNDANCES AND LOW-MASS STAR FORMATION. I. Si- AND S-BEARING SPECIES TOWARD IRAS 16293-2422 <i>Geoffrey A. Blake, Ewine F. van Dishoeck, David J. Jansen, T. D. Groesbeck, & Lee G. Mundy</i>	680	138-F13
DETERMINING STRUCTURE IN MOLECULAR CLOUDS <i>Jonathan P. Williams, Eugène J. de Geus, & Leo Blitz</i>	693	139-A1
HIGH-PRECISION TIMING OF MILLISECOND PULSARS. III. LONG-TERM MONITORING OF PSRs B1855+09 AND B1937+21 <i>V. M. Kaspi, J. H. Taylor, & M. F. Ryba</i>	713	139-B9
L 8 THE LARGE EDDY SIMULATION OF TURBULENCE: A SUBGRID SCALE MODEL INCLUDING SHEAR, VORTICITY, ROTATION, AND BUOYANCY <i>V. M. Canuto</i>	729	139-C13
AN IMPLICIT INTEGRAL METHOD TO SOLVE SELECTED RADIATIVE TRANSFER PROBLEMS. III. FACTORIZATION VERSUS LINEARIZATION <i>E. Simonneau & L. Crivellari</i>	753	139-E11
MAGNETIC BRAKING IN SPIN EVOLUTION OF MAGNETIZED T TAURI STARS <i>Insu Yi</i>	760	139-F6
THE TEMPERATURE AND GRANULATION STABILITY OF η CEPHEI <i>David F. Gray</i>	765	139-F13
SILICON MONOXIDE IN SN 1987A <i>Weihong Liu & A. Dalgarno</i>	769	139-G5
TeV GAMMA-RAY PROPERTIES OF VELA X-1 <i>B. C. Raubenheimer, A. R. North, O. C. de Jager, P. J. Meintjes, & H. I. Nel</i>	777	140-A1
THE X-RAY SELECTED CATAclysmic VARIABLES H0459+246 AND H0857-242 <i>R. A. Remillard, H. V. Bradt, R. J. V. Brissenden, D. A. H. Buckley, D. A. Schwartz, A. Silber, B. A. Stroozas, & I. R. Tuohy</i>	785	140-A11
A CORONAGRAPHIC SEARCH FOR BROWN DWARFS AROUND NEARBY STARS <i>T. Nakajima, S. T. Durrance, D. A. Golimowski, & S. R. Kulkarni</i>	797	140-B11
HD 129333: THE SUN IN ITS INFANCY <i>J. David Dorren & Edward F. Guinan</i>	805	140-C9
PARTICLE ACCELERATION IN AN EVOLVING ACTIVE REGION BY AN ENSEMBLE OF SHOCK WAVES <i>Anastasios Anastasiadis & Loukas Vlahos</i>	819	140-D11
PROPERTIES OF ACOUSTIC SOURCES IN THE SUN <i>Pawan Kumar</i>	827	140-E7
INJECTION PROFILES OF SOLAR ENERGETIC PARTICLES AS FUNCTIONS OF CORONAL MASS EJECTION HEIGHTS <i>S. Kahler</i>	837	140-F5
COUPLING OF THE CORONAL HELIUM ABUNDANCE TO THE SOLAR WIND <i>Viggo H. Hansteen, Egil Leer, & Thomas E. Holzer</i>	843	140-G1
EXPLORING THE FINE STRUCTURE AT THE LIMB IN CORONAL HOLES <i>Margarita Karovska, Solon F. Blundell, & Shadia Rifai Habbal</i>	854	141-A1
ELECTRIC CURRENTS AND CORONAL HEATING IN NOAA ACTIVE REGION 6952 <i>T. R. Metcalf, R. C. Canfield, H. S. Hudson, D. L. Mickey, J.-P. Wilser, P. C. H. Martens, & S. Tsuneta</i>	860	141-A10
ABSTRACTS OF THE ASTROPHYSICAL JOURNAL SUPPLEMENT SERIES, 1994 JULY		
Mg II ABSORPTION IN A SAMPLE OF 56 STEEP-SPECTRUM QUASARS <i>Thomas L. Aldcroft, Jill Bechtold, & Martin Elvis</i>	867	141-B5

CONTENTS

vii

	<i>Page</i>	<i>Fiche</i>
STRUCTURAL PROPERTIES OF COMPACT GROUPS <i>R. R. de Carvalho, A. L. B. Ribeiro, & Stephen E. Zepf</i>	867	141-B5
ON THE ACCURATE DETERMINATION OF THE CLUSTERING HIERARCHY OF GALAXIES <i>Péter Boschán, István Szapudi, & Alexander S. Szalay</i>	868	141-B6
THE BROAD EMISSION LINE AND CONTINUUM VARIATIONS OF SEYFERT GALAXIES. II. BROAD-LINE REGION STRUCTURE AND KINEMATICS <i>Edward I. Rosenblatt, Matthew A. Malkan, Wallace L. W. Sargent, & Anthony C. S. Readhead</i>	868	141-B6
OPTICAL SPECTROPHOTOMETRY OF BLAZARS <i>R. Falomo, R. Scarpitta, & M. Bersanelli</i>	868	141-B6
A SENSITIVE 1.5 GHz RADIO SURVEY AROUND THE NORTH ECLIPTIC POLE <i>Ronald I. Kollgaard, Wolfgang Brinkmann, Margaret McMath Chester, Eric D. Feigelson, Paul Hertz, Patricia Reich, & Richard Wielebinski</i>	869	141-B7
CCD PHOTOMETRY FOR SIX METAL-RICH GALACTIC GLOBULAR CLUSTERS <i>Ata Sarajedini & John E. Norris</i>	869	141-B7
THE GALACTIC OPEN CLUSTER NGC 7419 AND ITS FIVE RED SUPERGIANTS <i>Alain Beauchamp, Anthony F. J. Moffat, & Laurent Drissen</i>	869	141-B7
AN IUE SURVEY OF INTERSTELLAR H I Ly α ABSORPTION. I. COLUMN DENSITIES <i>Athanassios Diplas & Blair D. Savage</i>	870	141-B8
A SURVEY OF NEBULAE AROUND GALACTIC WOLF-RAYET STARS IN THE SOUTHERN SKY. I. <i>A. P. Marston, Y.-H. Chu, & G. Garcia-Segura</i>	870	141-B8
PULSATION AND STABILITY OF RR LYRAE STARS. I. INSTABILITY STRIP <i>G. Bono & R. F. Stellingwerf</i>	870	141-B8
SUMMARY OF ΔS METALLICITY MEASUREMENTS FOR BRIGHT RR LYRAE VARIABLES OBSERVED AT LICK OBSERVATORY AND KPNO BETWEEN 1972 AND 1987 <i>Nicholas B. Suntzeff, Robert P. Kraft, and T. D. Kinman</i>	871	141-B9
A VOLUME-LIMITED ROSAT SURVEY OF EXTREME ULTRAVIOLET EMISSION FROM ALL NONDEGENERATE STARS WITHIN 10 PARSECS <i>Brian E. Wood, Alexander Brown, Jeffrey L. Linsky, Barry J. Kellett, Gordon E. Bromage, Simon T. Hodgkin, & John P. Pye</i>	871	141-B9
HIGH-RESOLUTION SIMULATIONS OF COMPRESSIBLE CONVECTION USING THE PIECEWISE-PARABOLIC METHOD <i>David H. Porter & Paul R. Woodward</i>	872	141-B10
INDEX TO VOLUMES 426-428, PARTS 1 and 2	i	141-D1